

WHAT IS CLAIMED IS:

1. A method of forming high resolution electronic circuits on a substrate, comprising the steps of:

(a) laminating an upper surface of said substrate with a layer of dielectric film, said layer of dielectric film having an upper surface and a lower surface, said lower surface of said layer of dielectric film being contiguous with said upper surface of said substrate;

(b) laser drilling said upper surface of said layer of dielectric film to form at least one channel in said layer of dielectric film;

(c) filling said channel with an electrically conductive material;

(d) applying a release layer to said upper surface of said layer of dielectric film, said release layer having an upper surface and a lower surface, said lower surface of said release layer being coated with an adhesive layer, said adhesive layer being contiguous with and adhering to said upper surface of said layer of dielectric film; and,

(e) removing said release layer and said layer of dielectric film adhered thereto from said substrate, thereby exposing said electrically conductive material formed and patterned on said upper surface of said substrate.

2. The method of forming high resolution electronic circuits on a substrate as recited in Claim 1 wherein said step of laser drilling forms at least one substrate channel in said substrate.

3. The method of forming high resolution electronic circuits on a substrate as recited in Claim 1 wherein said electrically conductive material includes silver.

4. The method of forming high resolution electronic circuits on a substrate as recited in Claim 1 wherein said electrically conductive material includes copper.

5. The method of forming a high resolution electronic circuit on a substrate as recited in Claim 1 wherein the step of filling said channel with said electrically conductive material is followed by heating said substrate, said layer of dielectric film, and said electrically conductive material.

6. The method of forming high resolution electronic circuits on a substrate as recited in Claim 5 wherein the step of heating said substrate, said layer of dielectric film, and said electrically conductive material is followed by the application of a second layer of said electrically conductive material to said channel.

7. The method of forming high resolution electronic circuits on a substrate as recited in Claim 1 wherein said release layer is an acrylic coated polyester tape.

8. The method of forming high resolution electronic circuits on a substrate as recited in Claim 1 wherein the step of laser drilling uses an ultraviolet laser.

9. The method of forming high resolution electronic circuits on a substrate as recited in Claim 1 wherein said substrate is a polyimide composition.

10. The method of forming high resolution electronic circuits on a substrate as recited in Claim 1 wherein said layer of dielectric film is a polymer layer.

11. A method of forming high resolution electronic circuits on a substrate, comprising the steps of:

(a) laminating an upper surface of said substrate with a layer of dielectric film, said layer of dielectric film having an upper surface and a lower surface, said lower surface of said layer of dielectric film being contiguous with said upper surface of said substrate;

(b) laser drilling said upper surface of said layer of dielectric film to form at least one channel in said layer of dielectric film;

(c) filling said channel with an electrically conductive material;

(d) heating said substrate, said layer of dielectric film, and said electrically conductive material in order to bake and set said electrically conductive material;

(e) applying a release layer to said upper surface of said layer of dielectric film, said release layer having an upper surface and a lower surface, said lower surface being coated with an adhesive layer, said adhesive layer being contiguous with and adhering to said upper surface of said layer of dielectric film; and,

(f) removing said release layer and said layer of dielectric film adhered thereto from said substrate, thereby exposing said electrically conductive material formed and patterned on said upper surface of said substrate.

12. The method of forming high resolution electronic circuits on a substrate as recited in Claim 11 wherein said step of laser drilling forms at least one substrate channel in said substrate.

13. The method of forming high resolution electronic circuits on a substrate as recited in Claim 11 wherein said electrically conductive material includes silver.

14. The method of forming high resolution electronic circuits on a substrate as recited in Claim 11 wherein said electrically conductive material includes copper.

15. The method of forming a high resolution electronic circuit on a substrate as recited in Claim 11 wherein the step of heating said substrate, said layer of dielectric film and said electrically conductive material is accomplished through radiant heat transfer.

16. The method of forming high resolution electronic circuits on a substrate as recited in Claim 11 wherein the step of heating said substrate, said layer of dielectric film and said electrically conductive material is followed by the application of a second layer of said electrically conductive material to said channel.

17. The method of forming high resolution electronic circuits on a substrate as recited in Claim 11 wherein said release layer is an acrylic coated polyester tape.

18. The method of forming high resolution electronic circuits on a substrate as recited in Claim 11 wherein the step of laser drilling uses an ultraviolet laser.

19. The method of forming high resolution electronic circuits on a substrate as recited in Claim 11 wherein said substrate is a polyimide composition.



20. The method of forming high resolution electronic circuits on a substrate as recited in Claim 11 wherein said layer of dielectric film is a polymer layer.